

ABSTRACT OF THE DISCLOSURE

A method for manufacturing a semiconductor device having a semiconductor substrate with a contact hole filled by an aluminum-containing thin film. This manufacturing method includes a step of forming a silicon-containing thin film so as to fill the contact hole on the surface of the semiconductor substrate, a step of removing the part of the silicon-containing thin film outside the contact hole, a step of forming an aluminum-containing thin film on the surface of the semiconductor substrate after completing the step of removing the part of the silicon-containing substrate, and a step of heating the semiconductor substrate on which the aluminum-containing thin film is formed to such a temperature as to cause silicon to diffuse with respect to aluminum.